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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MORRISON & FOERSTER LLP
1650 TYSONS BOULEVARD
SUITE 300
MCLEAN, VA 22102

EXAMINER

AGGARWAL, YOGESH K

ART UNIT PAPER NUMBER

2615

DATE MAILED: 07/29/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/639,990

Applicant(s)

TANIDA ET AL.

Examiner

Yogesh K Aggarwal

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7 and 9-11 is/are rejected.
- 7) ☒ Claim(s) 6,8 and 12-14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Response to Amendment

1. The cancellation of claim 3 and addition of new claims 10-14 as indicated in Amendment filed 05/05/04 is acknowledged.

Response to Arguments

2. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

3. Claims 13, 14 are objected to because of the following informalities:

An image input apparatus as claimed in claim 8 should be: An image input apparatus as claimed in claim "12".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 4, 5, 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Meyers (US Patent # 6,137,535).

[Claim 1]

Meyers teaches an image input apparatus comprising an image formation unit array having a plurality of image formation units arranged in an array (figure 2, element 12);

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a photoelectric converter element having a flat photosensitive surface (figure 2, element 24), the photosensitive surface being divided into regions, each corresponding to one of the image formation units, where each region includes a plurality of photosensitive elements arranged therein (col. 5 lines 43-50); and

a restricting member (figure 2, element 16 and 70) for restricting, independently for each of the plurality of image formation units, optical paths along which the light beams are focused (col. 5 lines 51-57)

wherein the plurality of image formation units individually receive light beams substantially from an identical area and focus the received light beams on different regions of the photosensitive surface of the photoelectric converter element to form two-dimensional images of a subject in corresponding regions of the photosensitive surface (figure 2)

[Claim 2]

An image input apparatus as claimed in claim 1, wherein the individual images formed on the different regions are images of an object lying in the area as seen from different viewpoints [The plurality of microlenses 10 which are the image formation units receive light from different areas can be read as light received from different viewpoints].

[Claim 4]

Meyers teaches restriction member being realized as partition walls (col. 5 lines 51-53, figure 2, element 70).

[Claim 5]

An image input apparatus as claimed in claim 4 "... wherein those pixels of the photoelectric converter element, which output a bright-state signal when light enters the plurality of image

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formation units, are regarded as effective pixels". [Any photoelectric element in an image sensor such as Meyers, which outputs a bright state signal when bright light is incident thereon, is inherently regarded as an effective pixel].

[Claim 9]

Meyers teach a signal processing system for processing signals obtained as a result of photoelectric conversion performed by the photoelectric converter element by using processing functions provided one for each of the plurality of image formation units (col. 5 lines 31-42).

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyers (US Patent # 6,137,535) in view of Waldern et al. (US PG-PUB # 2001/0043163).

[Claim 7]

Meyers teaches the limitation of claim 1 but fails to teach "... wherein deflecting members provided one for each of the plurality of image formation units". However this limitation is well known in the art as taught in Waldern (Paragraph 132, figure 13, element 262). Therefore taking the combined teachings of Meyers and Waldern, it would have been obvious to one skilled in the art at the time of the invention to have deflecting members provided one for each of the plurality of image formation units. The benefit of doing so would be to have deflecting members to be used for deflecting the beam perpendicular to the microlenses, which are used for focusing as taught in Waldern (Paragraph 132).

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyers (US Patent # 6,137,535) in view of Waldern et al. (US PG-PUB # 2001/0043163) and in further view of Hirukawa et al. (US Patent # 6,249,335).

[Claim 10]

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Meyers and Waldern fail to teach “.... image formation units are diffracting optical elements, and the deflecting members are one-dimensional diffraction gratings”. However Hirukawa et al. teach that the mask R1 (an image formation unit) has a one-dimensional diffraction grating pattern RG1 and are therefore diffracting elements having optical properties (col. 13 lines 24-34). Therefore taking the combined teachings of Meyers, Waldern and Hirukawa, it would have been obvious to one skilled in the art at the time of the invention to have mask R1 (an image formation unit) having a one-dimensional diffraction grating pattern RG1 and are therefore diffracting elements having optical properties. The benefit of doing so would be so that high resolution and great depth of focus are obtained as taught in Hirukawa (col. 14 lines 1-3).

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meyers (US Patent # 6,137,535) in view of Waldern et al. (US PG-PUB # 2001/0043163) and in further view of Zarschitzky et al. (US Patent # 5,712,730).

[Claim 11]

Meyers and Waldern fail to teach “.... Deflecting members are Fresnel zone plates, the Fresnel zone plates being constituent components of the image formation units, the Fresnel zone plates having pattern centers thereof so arranged as to be decentered in such directions as to deflect light incident thereon.” However these limitations are well known and used in the art as shown in Zarchitsky et al. (col. 6 lines 55-64, col. 7 lines 5-16). Therefore taking the combined teachings of Meyers, Waldern and Zarchitsky, it would have been obvious to one skilled in the art at the time of the invention to have Deflecting members that are Fresnel zone plates, the Fresnel zone plates being constituent components of the image formation units, the Fresnel zone plates having pattern centers thereof so arranged as to be decentered in such directions as to deflect light

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incident thereon. The benefit of doing so would be to provide focusing of the beam in which diffraction grating structures is a portion of the Fresnel lens.

Allowable Subject Matter

9. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 8, 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. The following is a statement of reasons for the indication of allowable subject matter:

a) As for claim 6, the prior art of record does not teach or fairly suggests an image input apparatus wherein the restricting member is a polarizing filter array having polarizing filters arranged one for each group of the plurality of image formation units, every two adjacent polarizing filters having mutually perpendicular polarization angles.

b) As for claim 8, the prior art of record does not teach or fairly suggests an image input apparatus wherein the spectroscopic members are provided one for each of the plurality of image formation units.

c) Claims 12-14 are dependent upon claim 8.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K Aggarwal whose telephone number is (703) 305-0346. The examiner can normally be reached on M-F 9:00AM-5:30PM.

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YKA

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July 19, 2004



TUAN HO
PRIMARY EXAMINER